35799

WORK PLAN

ADDITIONAL SOURCE INVESTIGATION

BALLY ENGINEERED STRUCTURES SITE
BALLY, PENNSYLVANIA

WORK PLAN

ADDITIONAL SOURCE INVESTIGATION

BALLY ENGINEERED STRUCTURES SITE
BALLY, PENNSYLVANIA

PREPARED FOR

ALLEGHENY INTERNATIONAL, INC.
PITTSBURGH, PENNSYLVANIA

FEBRUARY 1989

PROJECT NO. 88835

REMCOR, INC.
PITTSBURGH, PENNSYLVANIA

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

This work plan has been developed by Remcor, Inc. (Remcor) on behalf of Allegheny International, Inc. (AI). The proposed scope of work includes an additional investigation of potential contaminant source(s), requested by the U.S. Environmental Protection Agency (EPA), to supplement the Remedial Investigation (RI) of the Bally Engineered Structures (BES) Site in Bally, Pennsylvania. Figures 1 and 2 provide a site location map and plan of the area investigated in the RI.

The purpose of the additional investigation is to determine whether an ongoing source of chlorinated volatile organic compound (VOC) contamination exists that may be contributing to the ground water contamination observed within the Borough of Bally. The scope of work was developed based on an RI review meeting conducted between representatives of AI, EPA Region III, the Pennsylvania Department of Environmental Resources (PADER), and Remcor on December 19, 1988.

1.1 PREVIOUS INVESTIGATIONS

Previous efforts to delineate a source of the chlorinated solvent contamination focused on soil sampling of a ground-scarred area on the property to the north of the BES plant by Environmental Resources Management, Inc. (ERM) in 1986 and the investigation of four suspected source areas within the BES plant complex by Remcor during RI activities in 1987 and 1988. The four areas within the plant area consisted of:

- The northern lagoon area that consists of two former shallow lagoons. This area is believed to have been used from the mid-1950s to the mid-1960s.
- The southern lagoon area that also consisted of two former lagoons. This area was in use during the 1960s.
- The former degreasing area, where trichloroethylene (TCE) was used exclusively to clean meat display cases prior to application of foam insulation material. This area was used primarily during the 1960s.

- The current degreasing area where small parts are cleaned. Various solvents were used in this area from the early 1960s to present day.

These four locations are shown in Figure 3, which also identifies subsurface soil and ground water sampling points from the RI.

None of the areas previously investigated appear to be an ongoing source of the ground water contamination, if such a source exists. In the ground-scarred area, only one soil sample detected any VOCs; these compounds (methylene chloride, 30 micrograms per kilogram [µg/kg] and toluene, 20 µg/kg) are unrelated to the aquifer contamination.

Of the four source areas occurring within the plant, only the former degreasing area was found to contain VOCs. In this area, TCE was detected in soil at a maximum concentration of 8 µg/kg and 1,1,1-trichloroethane (TCA) at a maximum concentration of 13 µg/kg. In addition, toluene was also detected at a maximum concentration of 43 µg/kg. A ground water monitoring well (MW87-13S) also installed in this area indicated chlorinated solvents within the shallow aquifer (17 micrograms per liter [µg/ℓ] TCE, 4 µg/ℓ TCA, and 3 µg/ℓ 1,1-dichloroethene [DCE]). These levels are less than those that would be expected if this area is an ongoing source of the ground water contamination.

The concentration of VOCs occurring within the former degreasing area suggests that either this area is not the main source of aquifer contamination or that the contamination occurring within this area has migrated from the source into the aquifer and all that remains are extremely low residual levels of contamination. The latter possibility does not appear likely because the former degreasing area is under an enclosed portion of the building with a concrete floor that would restrict vertical migration of contaminants within the soil. In addition, the VOCs exhibit a rather wide lateral dispersion in the aquifer immediately downgradient (northeast) of the plant, as evidenced by concentrations at

Well Clusters 86-3 and 86-4 (Figure 3). This degree of dispersion suggests that aquifer contamination in this area may have been caused by the historic disposal of spent solvents along the northern portion of the BES property. Total chlorinated VOCs in the shallow portion of the aquifer immediately north of the BES plant were found to range from 1,280 µg/ℓ in MW87-13S to 3,900 µg/ℓ in MW87-4I in RI sampling performed by Remcor in December 1987.

1.2 OBJECTIVE AND SCOPE OF INVESTIGATION

The objective of the proposed investigation is to determine whether an active source of chlorinated VOCs exists in the immediate vicinity of the BES facility. If a current source or sources exist, the investigation will define their lateral and vertical extent.

The investigation will include the drilling of 18 test borings as shown in Figure 4. Test borings will be drilled approximately on 100-foot centers along transects 50 feet apart between well Locations 3 and 4. Of these borings, 16 will be advanced to the depth of water table or top of bedrock (if it occurs above the water table). Soil samples will be collected from each test boring and analyzed for target volatiles and their respective isomers:

- Total (1,1,1- and 1,1,2-) TCA
- TCE
- Total (1,1- and 1,2-) DCE
- Tetrachloroethene (PCE).

These results will establish whether a source of VOCs exists in this area. The remaining two test borings will actually be drilled first and will be advanced to at least 10 feet below the water table. Two-inch diameter standpipes will be installed in each of these two borings to serve as temporary monitoring points from which ground water samples can be extracted. These two sampling points will be sampled for the same target volatiles as for soils with expedited (24- to 48-hour) turnaround. The ground water sample results will aid in determining the concentration of chlorinated VOCs within the shallow portion of the

aquifer between the BES plant and monitoring wells at Locations 3 and 4 (Figure 4). This information, coupled with existing analytical data from nearby wells (86-3S, 86-3D, 86-4, 87-4I, 87-13S, plant well) and knowledge of the prevailing ground water flow direction will permit definition of whether an active source area exists within the confines of the BES plant. Remcor considers this possibility unlikely based on existing data.

2.0 SCOPE OF WORK

This chapter provides a detailed scope of work for the additional source investigation. The scope of work is presented for four specific tasks. All activities described herein will be conducted in accordance with the EPA-approved Field Sampling and Analysis Plan (FSAP), Site-Specific Health and Safety Plan (HASP), and Quality Assurance Project Management Plan (QAPMP) for the Bally Engineered Structures Site (Remcor, 1987). Decontamination procedures will also be conducted in accordance with the approved FSAP.

2.1 TASK 1 - MOBILIZATION

Upon approval of this work plan by the EPA, Remcor is prepared to mobilize all personnel and equipment necessary to complete the investigation. Arrangements will be made to obtain the services of a drilling subcontractor and a qualified laboratory in this mobilization task.

At the time of mobilization, Remcor will meet with cognizant plant personnel to discuss the possibility of sources of the aquifer contamination related to BES activities other than those already investigated. The discussion will concentrate on potential sources along the northern portion of the property, in the general vicinity of the aquifer contamination identified at MW-3 and MW-4 locations. At this time, final arrangements will be made for access to the drilling locations.

2.2 TASK 2 - TEST BORING DRILLING, STANDPIPE INSTALLATION, AND SAMPLING

Drilling will commence at the 18 locations shown in Figure 4 using a geotechnical drill rig capable of obtaining continuous split-spoon samples. All soil samples will be collected using clean, decontaminated split-spoon samplers; several split-spoons will be maintained on site so that a clean sampler is always available.

Each boring will be logged and supervised by an experienced geologist. The Unified Soil Classification System will be used as a guide for logging each boring. Soil cuttings and samples obtained from each boring

will be initially scanned using an HNu™ photoionization detector to determine gross VOCs present.

At all 18 locations, drilling will proceed to the water table surface. At two locations (Figure 4), the boring will be advanced 10 feet below the water table surface. A temporary, two-inch diameter polyvinyl chloride (PVC) standpipe consisting of 10 feet of manufactured well screen (slot size 0.01 inch) and threaded PVC riser will be installed into each of the two boreholes. The borehole will be sand packed to approximately one foot above the well screen. Figure 5 details typical standpipe construction.

Subsurface soil sampling will be conducted in all 18 test borings to define whether VOC contamination exists in the unconsolidated material above the water table. Continuous, split-spoon sampling will be conducted within the unconsolidated materials from the ground surface to the water table surface.

It is anticipated that three soil samples will be collected from each borehole. Selected split-spoon soil samples will be analyzed by Spotts, Stevens & McCoy Laboratory (SS&M), Wyomissing, Pennsylvania for site-specific target VOCs. These compounds are TCE, total TCA, total DCE, and PCE. Samples will be selected for analysis by SS&M based on field screening results with the HNu. The field screening will be conducted as follows:

- Adequate sample will be removed from the split-spoon to fill two volatile organic analysis (VOA) vials completely and a 250-milliliter (mℓ) jar two-thirds full.
- All three containers will be sealed immediately and appropriately labeled as to sample location and time.
- The VOA vials will be stored on ice (4 degrees Celsius).

- The partially-full (250-mℓ) jar will be allowed to stand for a prescribed time (1 to 2 hours) under constant temperature conditions to allow the VOCs to come into equilibrium with the headspace in the jar. The same standing time and temperature will be maintained for all screening samples.

- After the required standing time, the partially-full jar will be opened and the headspace gases will be immediately scanned with the HNu.

- The peak HNu organic vapor reading will be recorded.

The services of SS&M will be used to quantify any highly-contaminated soils encountered during the soil sampling program, as well as to confirm the absence of VOCs in those samples that appear to be uncontaminated on the basis of the HNu results. SS&M results will be available within 24 hours of sample receipt. Remcor conservatively considers the SS&M analyses to be Level II data quality, equal to or better than that achievable with an on-site laboratory.

On a daily basis, a minimum of one VOA vial from those samples that register 5 parts per million by volume (ppmv) above background in the screening process will be sent to SS&M for target VOC analysis. A representative number of "clean" samples will also be submitted to SS&M for analysis. It is anticipated that approximately 60 soil samples will be collected from the 18 borings. Of these, Remcor estimates that 30 samples will be forwarded to SS&M for analysis. Methods used by SS&M will be those in "Test Methods for Evaluating Solid Waste," SW-846, (EPA, November 1986).

Those samples suspected of having low quantities of VOCs, based on the HNu screening and visual/odor characteristics, will be analyzed by Method 8010, a gas chromatographic (GC) method. Those that are suspected of containing higher concentrations will be analyzed by Method 8240, a GC/mass spectrometer (GC/MS) method to ensure the maintenance of rapid turnaround time as well as detection limits. The appropriate method

for each sample will be specified to the laboratory by Remcor field personnel.

Laboratory quality assurance (QA) procedures to be undertaken during this sampling and analysis by SS&M include duplication and matrix spiking of at least 10 percent of the samples. A method blank will be analyzed no less than once per sample batch (daily).

Following daily receipt of SS&M rapid-turnaround results, confirmation will be made by sending 10 percent (or at least three samples) of those samples reported as contaminated to the NUS Corporation Laboratory Services Division (NUS/LSD) for the same analysis. This will be done by sending the remaining VOA vial being stored on ice. Samples will be submitted within 48 hours of collection in all cases. Additionally, at least two samples characterized as uncontaminated by the screening procedure will also be sent to NUS for confirmatory analysis. Remcor estimates that approximately seven soil samples will be submitted to NUS for confirmatory analysis. NUS will utilize GC/MS Method 8240 (EPA, November 1986). Their QA procedures are the same as those specified for SS&M. The turnaround time for these results will be three to four weeks. The NUS data will be considered Level III data quality.

The standpipes will be developed prior to sampling by purging several volumes of water by hand bailing using a dedicated, clean, decontaminated stainless steel bailer. This procedure will allow for a more representative sample by removing fines (silt and clay particles) that may become suspended within the aquifer due to the drilling process. Development procedures will be conducted until turbidity is eliminated or for a minimum of one hour. If the well yield is such that the standpipe becomes evacuated during purging activities, several purging episodes may be required to develop the well.

After development is completed, the water level within the standpipe will be allowed to stabilize. After stabilization, the well will be sampled using the bailer dedicated to the well during development.

Three to five well volumes will be removed prior to obtaining a sample. Field measurements of pH and conductivity will be obtained during purging to provide an indication that undisturbed formation water is entering the well.

Two ground water samples will be analyzed by the NUS/LSD for the same target list of VOCs identified for soils. Analysis will be in accordance with SW-846 Method 8010 (EPA, November 1986). Sampling procedures will be in accordance with those described in Chapter 5.0 of the FSAP.

2.3 TASK 3 - BOREHOLE SEALING

Upon completion, all boreholes will be tremie-grouted to ground surface using a mixture of cement and bentonite. Standpipes in the temporary sampling points will be removed and boreholes will be sealed in the same manner as the soil borings.

2.4 TASK 4 - DATA REDUCTION AND EVALUATION

Upon completion of all field activities and receipt of laboratory data, a written summary will be prepared that will fully describe the sampling results of the additional source area study. The summary will identify the lateral and vertical extent of any source areas found and the need for remediation of such areas. The summary will be incorporated into the Feasibility Study (FS) Report being prepared for the BES site for submittal to the EPA.

3.0 PROJECT SCHEDULE

Remcor is prepared to mobilize to the site within two weeks of EPA approval of the scope of work to initiate the additional source investigation. All field activities associated with the additional source investigation can be completed within a one-week time frame. Final receipt of analytical data is anticipated within four weeks of the conclusion of the field study. A summary describing all sampling activities will be available within three weeks of receipt of the analyses to be. The report will then be revised and incorporated into the FS Report. This time frame allows for the return of all non-rush laboratory data within a four-week turnaround period.

4.0 CLOSING

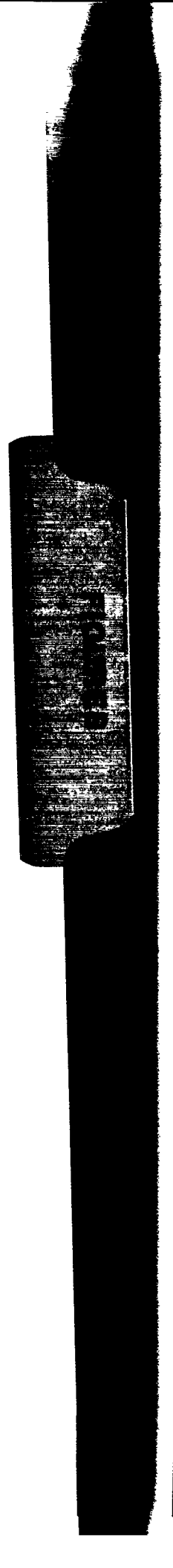
This work plan addresses the objectives discussed at our December 19, 1988 meeting to resolve whether any active source of VOC contamination exists immediately north of the BES plant. Based on existing data, Remcor does not believe that such a source exists. Should this investigation confirm the absence of an active source, remedial action at the BES site will consist of ground water extraction and treatment to address the currently-defined VOC contaminant plume, as well as provision of a suitable alternative water supply for the borough. In the event that a source of VOC contamination is identified, remedial action alternatives will be developed and evaluated in the FS Report.

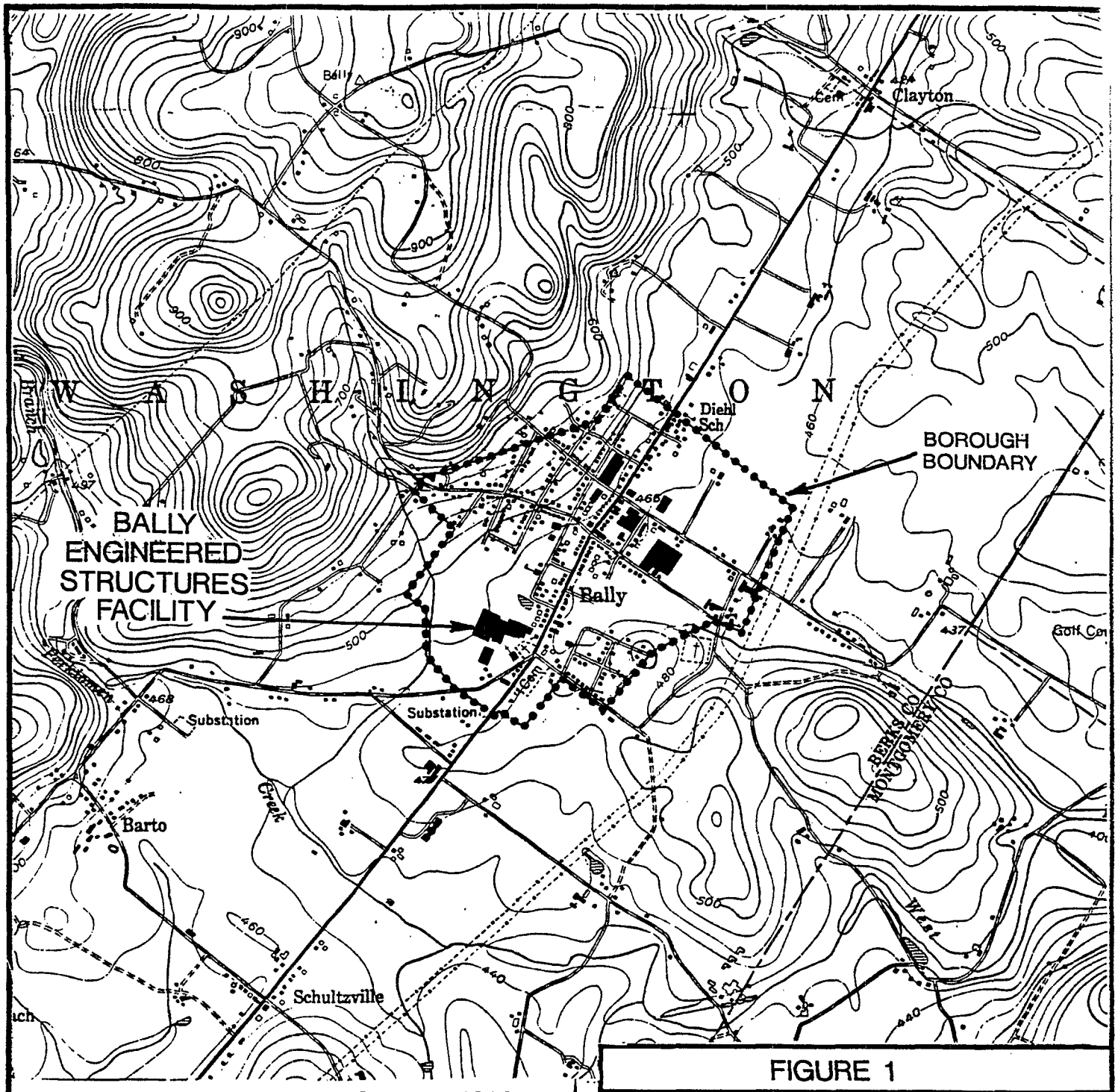
Please feel free to contact us if you have any questions or comments after reviewing this work plan.

Respectfully submitted,

John A. George

John A. George
Manager, Geosciences Group





REFERENCE:

USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE, EAST GREENVILLE, PA, 1956, PHOTOREVISED 1969 AND 1973. SCALE 1:24000

AR301070

128579

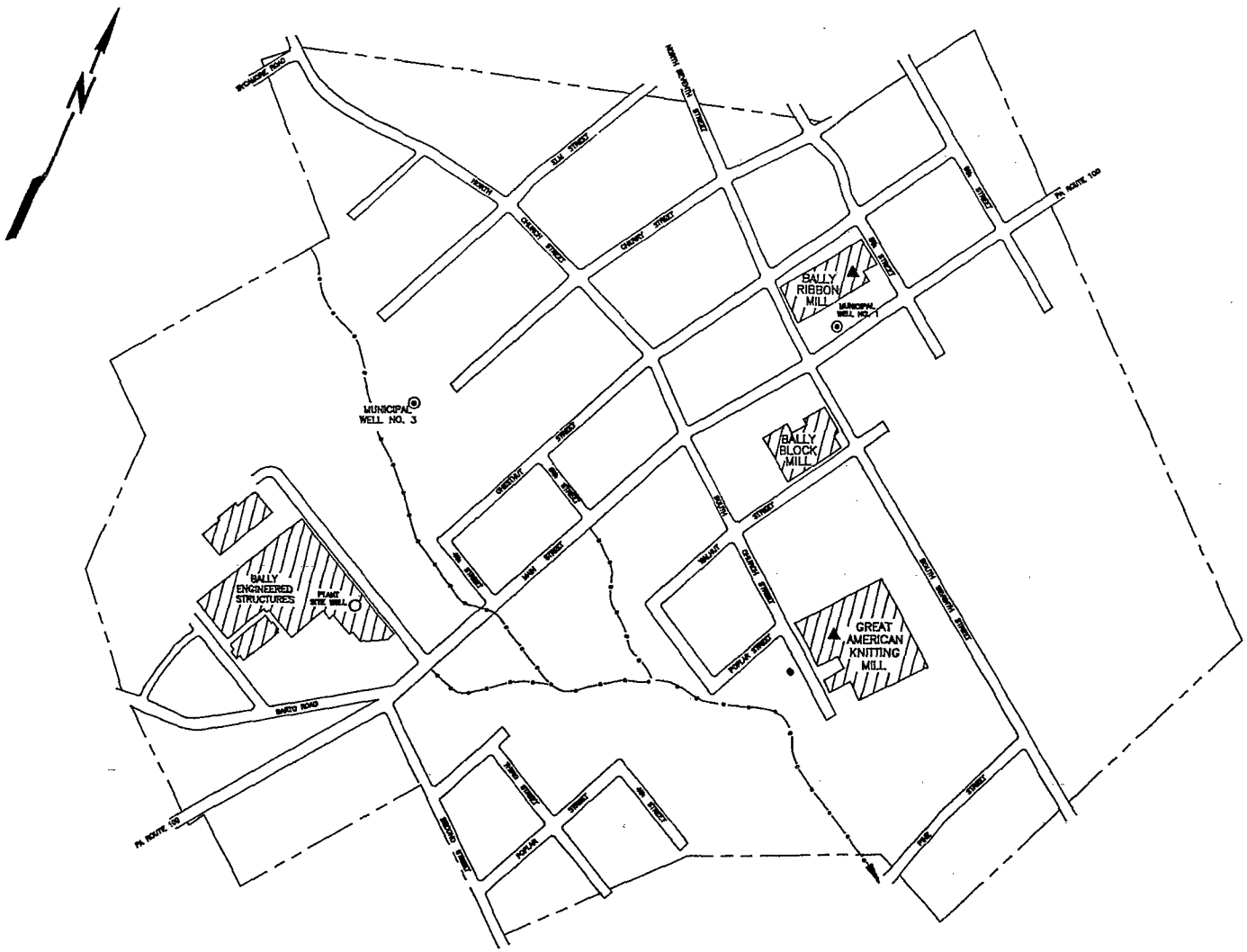
FIGURE 1

SITE LOCATION MAP

PREPARED FOR
ALLEGHENY INTERNATIONAL, INC.
PITTSBURGH, PENNSYLVANIA

DRAWN	LBL 11-11-88	DRAWING NUMBER
CHECKED	JAG 02-01-89	88835-A2
APPROVED		

REMCOR



LEGEND:

- OFF SITE INDUSTRIAL WELL LOCATION (ESTIMATED LOCATION)
- BOROUGH LINE
- STREAM
- MUNICIPAL WELL
- ON-SITE INDUSTRIAL WELL (NOT IN USE)

500 0 500 1000

scale: 1" = 500' (APPROX.) feet

REFERENCE:

BASE MAP FROM TOPOGRAPHICAL SURVEY, BOROUGH OF BALLY (1975).

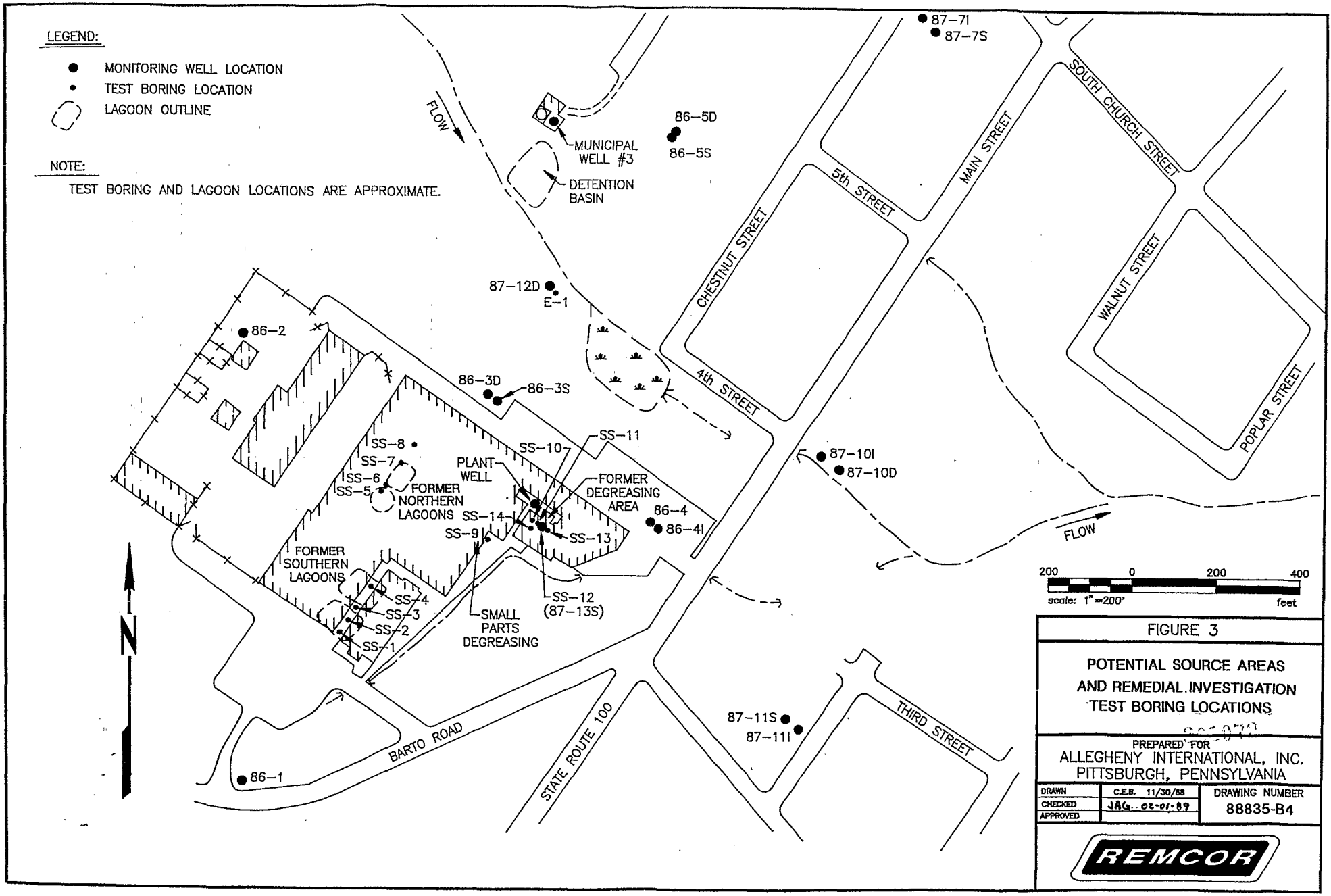
FIGURE 2

SITE PLAN

PREPARED FOR
ALLEGHENY INTERNATIONAL, INC.
PITTSBURGH, PENNSYLVANIA

DRAWN	LHK 11/23/88	DRAWING NUMBER
CHECKED	JAL 02-01-89	88835-B3
APPROVED		

REMCOR


LEGEND:
MONITORING WELL LOCATION
TEST BORING LOCATION
LAGOON OUTLINE
NOTE:
TEST BORING AND LAGOON LOCATIONS ARE APPROXIMATE.
FLOW
MUNICIPAL WELL #3
DETENTION BASIN
86-5D
86-5S
87-7I
87-7S
SOUTH CHURCH STREET
MAIN STREET
5th STREET
CHESTNUT STREET
WALNUT STREET
POPLAR STREET
4th STREET
87-12D
E-1
86-2
86-3D
86-3S
SS-8
SS-7
SS-6
SS-5
SS-10
SS-11
PLANT WELL
FORMER NORTHERN LAGOONS
FORMER DEGREASING AREA
86-4
86-4I
SS-14
SS-9
SS-13
FORMER SOUTHERN LAGOONS
SS-4
SS-3
SS-2
SS-1
SS-12 (87-13S)
SMALL PARTS DEGREASING
87-10I
87-10D
FLOW
N
BARTO ROAD
86-1
STATE ROUTE 100
87-11S
87-11I
THIRD STREET
200 0 200 400
scale: 1"=200'
feet
FIGURE 3
POTENTIAL SOURCE AREAS AND REMEDIAL INVESTIGATION TEST BORING LOCATIONS
PREPARED FOR
ALLEGHENY INTERNATIONAL, INC.
PITTSBURGH, PENNSYLVANIA
DRAWN C.E.B. 11/30/88
CHECKED JAG. 02-01-89
APPROVED
DRAWING NUMBER 88835-B4
REMCOR

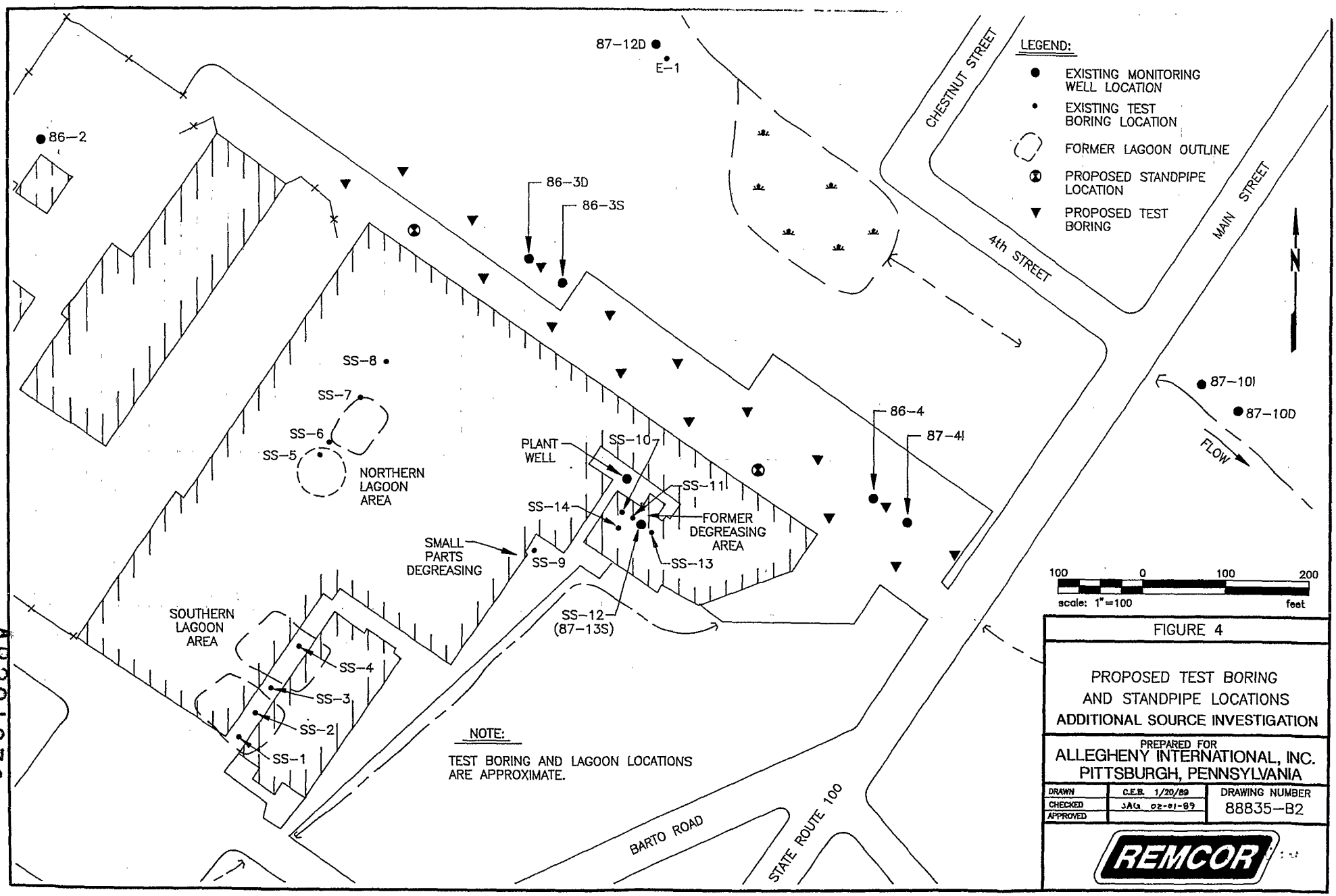


FIGURE 4

PROPOSED TEST BORING AND STANDPIPE LOCATIONS
ADDITIONAL SOURCE INVESTIGATION

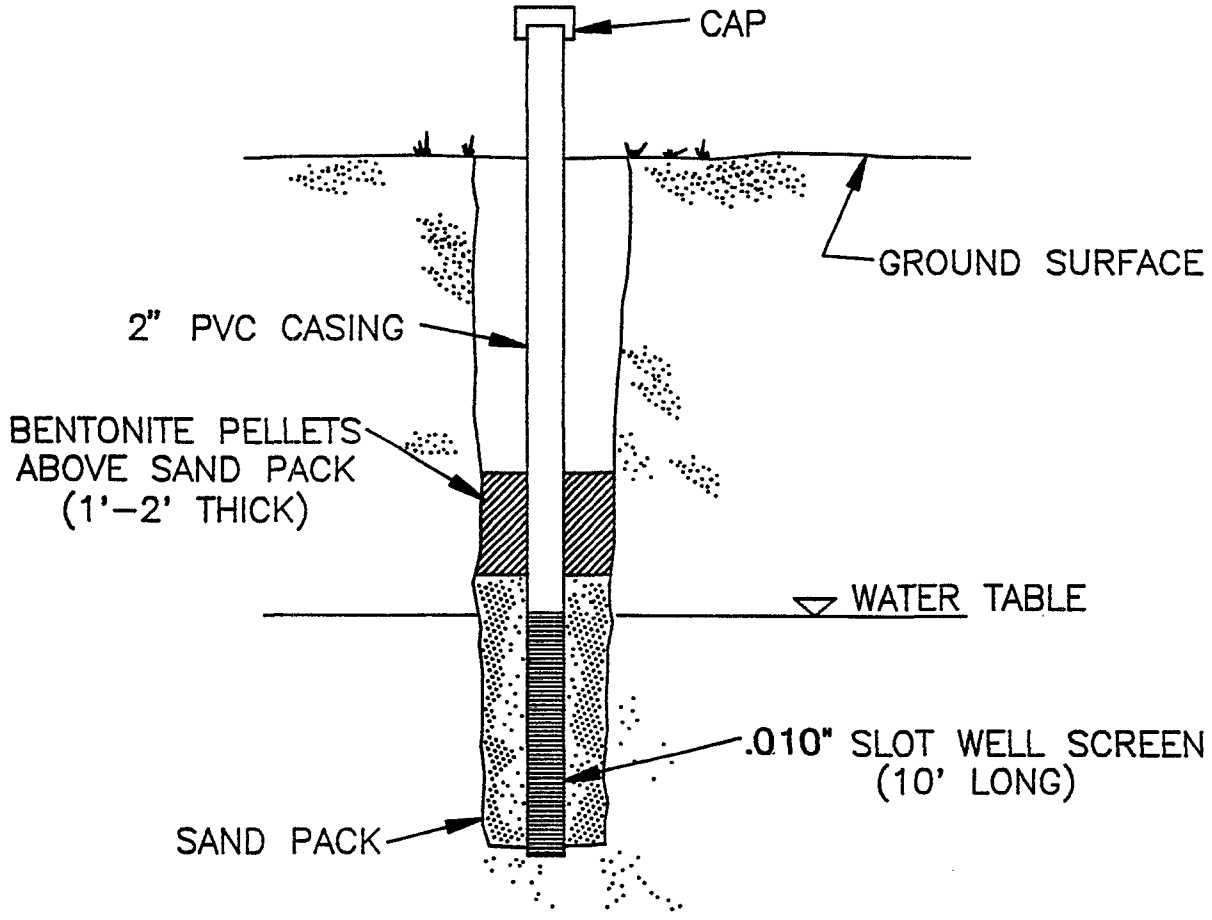
PREPARED FOR
ALLEGHENY INTERNATIONAL, INC.
PITTSBURGH, PENNSYLVANIA

DRAWN	C.E.B. 1/20/89	DRAWING NUMBER
CHECKED	JAG 02-01-89	88835-B2
APPROVED		

REMCOR

AR301073

2" PVC WELL



DRAWING NOT TO SCALE

NOTE: UPON COMPLETION OF SAMPLING ACTIVITIES THE TWO INCH PVC PIPE WILL BE REMOVED. THE BORING WILL THEN BE TREMIE GROUTED WITH A CEMENT/3% BENTONITE MIXTURE.

FIGURE 5

STANDPIPE CONSTRUCTION

ADDITIONAL SOURCE INVESTIGATION

PREPARED FOR
ALLEGHENY INTERNATIONAL, INC.
PITTSBURGH, PENNSYLVANIA

DRAWN	R.J.H. 1–4–89	DRAWING NUMBER
CHECKED	JAG 02-01-89	88835–A1
APPROVED		

REMCOR